

ABSTRACT

The invention is directed to a material and a method of producing the material that is unaffected by the low-temperature degradation, humidity-enhanced phase transformation typical of yttria-stabilized zirconia, as well as of yttria-stabilized tetragonal zirconia polycrystalline ceramic (Y-TZP). Because of the high fracture toughness and high mechanical strength, this class of materials is widely used, including as implants, such as for the packaging material for small implantable neural-muscular sensors and stimulators. The destructive phase transformation rate is dramatically reduced by coating the surface of the Y-TZP component with dense alumina by a physical vapor deposition process, preferably ion beam assisted deposition.